

## Seminar 11

1. Use the dataset `GoldSilver.csv`.
  - (a) Create a linear model of the silver price dependent on the time.
  - (b) Create a linear model of the logarithm of the silver price dependent on the time.
  - (c) EXTRA TASK: do the same for the gold prices.

For all models check the assumptions using the diagnostic graphs, compute the numerical characteristics to determine the quality of your models and plot your data together with a regression line estimated by your models. Predict the price of silver on 25.04.2013.

2. Use the dataset `Computers.csv` from seminar 2. Create a linear regression model of the dependence of the `price` variable on the rest of the variables.
  - Consider `ram`, `screen`, `cd`, `multi` and `premium` as categorical variables.
  - Consider `speed`, `hd`, `trend` as numerical variables.
  - (a) Firstly, create a linear model dependent on the variables `speed` and `ram`, use the model without any interactions, model only with interactions and model with the both variables themselves and interactions. Which model seems to be the best one?
  - (b) Then create a full linear regression model considering all the variables.
  - (c) Finally, create a full model with the interactions of all pairs of your variables. Apply the backward step-wise procedure to this model. Which interactions were omitted?
  - (d) Compare the quality of your models using the adjusted  $R^2$ .
  - (e) EXTRA TASK: perform the logarithmic transformation of the price variable and follow the same steps as for the original one.